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ABSTRACT

The use of magnitude estimation scaling (MES) was investigated to clarify educational priorities and to ascertain the commonality of desired educational outcomes in three Washington communities. One item from a set of 50 outcome statements was selected as the referent, and participants in several communities compared the remaining items to it, assigning a value to each item in terms of its relative importance. The field test supported the feasibility of MES for clarifying priorities. A wide range of geometric means and a clear ranking of items were obtained for decision-making purposes. The ordering of objective areas demonstrated commonality among the communities surveyed and with other studies. (Author)

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USING MAGNITUDE ESTIMATION SCALING

TO COMPARE PRIORITIES

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This study had two purposes. In general, it attempted to investigate the feasibility of using a magnitude estimation scaling (MES) procedure to clarify educational priorities in small school districts. Specifically, however, the MES responses of participants in three Washington communities were compared to determine the commonality of desired educational outcomes and the predictive value of the items. The study was conducted by the Program Evaluation and Research Section of the Washington Superintendent of Public Instruction with the assistance of Educational Service District 114.

Magnitude estimation scaling is defined as a process which substitutes each participant's determination of item values for the more popularly used fixed category scales. Instead of indicating item priorities in terms of one of a set of categories, for example, one of five, the participant is requested to assign values to each of the survey items in relation to a selected referent point. In many studies the referent item has been given a value of 50, and participants instructed to compare each of the remaining items to this. If an item is thought to be twice as important as the referent it is rated 100, fives times as important 250, half as important 25. The geometric mean is used as the measure of central tendency and as the basis for statistical analysis.

The activities reported in this paper build on three previous efforts: a pilot study conducted at the Stanford Research Institute (Dell and Meeland, 1973) which compared the responses of a group using a fixed category scale to those of a group using MES; a MES assessment of needs for a California elementary school (Monta Loma, 1974); and an investigation using MES in small Washington school districts to determine the desirability of selected educational outcomes (Rasp, 1975). The survey items used in these studies were nearly identical with most adapted from a collection of outcome statements developed by the Center for the Study of Evaluation at the University of California, Los Angeles.

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In the present investigation fifty survey items were prepared as sets of cards. Following the common lead phrase, "Upon completion of elementary school (6th grade) it is desirable that as a result of school most children..." each card contained a statement of an outcome defined by examples. One item from the survey was selected randomly and assigned the value of 50. Participants were instructed to compare the remaining items to this referent and to assign values in terms of relative importance. A listing of the items in an abridged form is included on page four.

Three school districts located in rural/suburban areas along the northern coast of the Olympic Peninsula in Washington participated in the study. The districts ranged in size from approximately 130 to 1,650 students. After the MES process and materials were reviewed in a joint meeting, local advisory committees were formed with responsibility: for coordinating the district-wide efforts, for selecting the participant population, for distributing and collecting the survey cards, and for reporting information to their communities. The completed survey packets were sent to the state office for tabulation. At that time the responses were key punched for computer processing and the geometric mean for each item was calculated. The results of the survey were analyzed, arranged for public display, and returned to the local districts. The geometric means are included on page four.

The responses for the survey items in the three districts approached congruence. When the items were ordered based on the magnitude of the geometric means, all three districts shared ten common items or 83 percent in the upper quartile and twelve common items or 92 percent in the lower quartile. In addition, since the survey items represent eleven areas of elementary educational objectives, the arithmetic means of the geometric means for the items subsumed by each objective were calculated. The plotting of these means resulted in a nearly identical rank ordering display. In comparing the three Washington communities with the experience of the Monta Loma School in California, the rank order pattern was again reinforced. This data is presented on page five. To study the statistical significance of the differences in the rankings by the Washington communities, a Friedman two-way analysis of variance by ranks was conducted on the ordering of the geometric means for each item. With two degrees of freedom, the Friedman value of .21 indicated that the priorities established independently by the three communities were not significantly different and that differences as great as those observed could be expected 90% of the time based on chance alone.

The results of the community priority surveys, as in other studies, speak well to the practicability of the items and process. The local advisory committees testified to the ease of logistical operations. The participants were clearly able to "estimate magnitude." The composite of responses did generate a wide range of geometric means and a clear rank ordering of items. The information was reported as being useful for decision-making purposes.

References

Dell, D. and Meeland, T. Needs assessment scaling procedures. Menlo Park, California: Stanford Research Institute, 1973.

Monta Loma School Parent Survey. Assessment of needs and goals. Mountain View, California: Whisman School District, final report, September, 1974.

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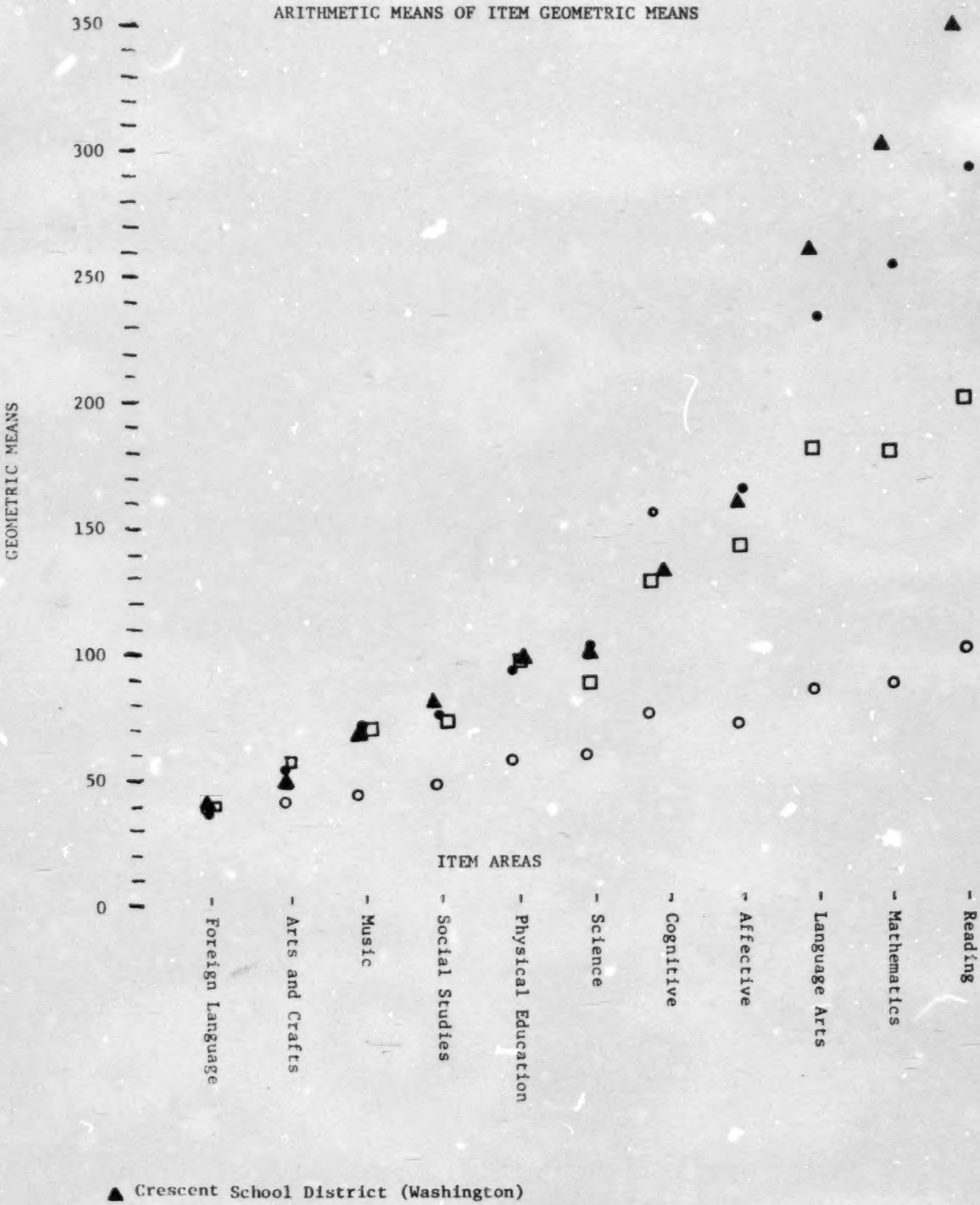
MAGNITUDE ESTIMATION SCALING ITEMS
IN ABRIDGED FORM WITH GEOMETRIC MEANS

Upon completion of elementary school (6th grade) it is desirable that as a result of school most children:

		Crescent	Fairview	Sequim
1.	Know and practice health and safety	50	50	50
2.	Have a positive attitude toward school and teachers	116	173	105
3.	Show a desire to achieve	133	173	124
4.	Have an appreciation for reading	255	229	141
5.	Know about economics	72	61	57
6.	Like arts and crafts	38	43	43
7.	Know about physical education	74	98	63
8.	Perform some form of music arts	60	78	57
9.	Make art and craft objects	54	56	49
10.	Know about political science	125	83	79
11.	Have developed interests outside of school	78	89	99
12.	Have developed a sense of sportsmanship	173	144	143
13.	Have a general positive attitude toward themselves	254	213	187
14.	Have healthy social attitudes	227	173	172
15.	Know a foreign language	36	24	30
16.	Have begun to understand philosophies	68	56	57
17.	Know about religions	73	48	49
18.	Know about anthropology	53	40	39
19.	Know about sociology	59	47	56
20.	Know facts about history	86	99	68
21.	Know something about foreign languages	47	40	42
22.	Know about drugs	121	117	99
23.	Know about psychology	61	43	59
24.	Have developed good study skills	212	222	163
25.	Have a healthy personal temperament	166	144	153
26.	Know the basic ideas of mathematics	240	180	136
27.	Know how to do basic arithmetic problems	307	302	216
28.	Know how to read	397	342	242
29.	Be able to use mathematics	356	264	178
30.	Can interpret what they read	345	283	202
31.	Can understand what they read	383	300	209
32.	Know how to write well	323	257	194
33.	Speak so that others can understand them	253	202	183
34.	Know something about the physical sciences	96	81	71
35.	Be able to listen	276	242	189
36.	Know and use language correctly	232	222	155
37.	Know about geography	146	136	101
38.	Be able to make judgments	136	139	148
39.	Can put information together	144	154	131
40.	Know many facts or ideas	87	127	80
41.	Can break down information	108	138	83
42.	Have an understanding of what they learned	157	178	141
43.	Can apply what they have learned	167	177	165
44.	Have a general idea of the use of history	82	100	93
45.	Know something about biology	88	82	81
46.	Know about ecology	96	68	105
47.	Enjoy and appreciate music	81	59	79
48.	Understand arts and crafts	55	53	58
49.	Know something about the earth sciences	104	110	84
50.	Have some knowledge of family life education	90	64	108


ARITHMETIC MEANS OF ITEM GEOMETRIC MEANS
GEOMETRIC MEANS
350
300
250
200
150
100
50
0
ITEM AREAS
- Reading
- Mathematics
- Language Arts
- Affective
- Cognitive
- Science
- Physical Education
- Social Studies
- Music
- Arts and Crafts
- Foreign Language
▲ Crescent School District (Washington)
● Fairview School District (Washington)
o Monta Loma School (California)
□ Sequim School District (Washington)